REMARKS

In response to the final Office Action dated 29 April 2003, the applicant requests reconsideration of the above-identified application in view of the following remarks. Claims 24-26 and 30-61 are pending in the application, and are rejected. None of the claims have been amended.

Double Patenting Rejection

Claims 24-26 and 30-61 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims in U.S. Patent No. 6,031,263. The applicant will address this rejection when the claims are otherwise indicated as allowable.

Rejections of Claims Under §103

Claims 24, 30, 32-33, 37-38, 42-43, 47-48, 52-53, and 57-58 were rejected under 35 USC § 103(a) as being unpatentable over Hori (U.S. Patent Number 5,604,357). The applicant respectfully traverses.

Claim 32 recites a method of forming a floating gate transistor comprising forming a gate insulator comprising silicon dioxide (SiO_2) on a substrate, and forming a floating gate on the gate insulator, the floating gate comprising gallium nitride (GaN) or gallium aluminum nitride (GaAlN).

Hori relates to a semiconductor memory. However, Hori does not show forming a gate insulator comprising silicon dioxide (SiO_2) and forming a floating gate comprising gallium nitride (GaN) or gallium aluminum nitride (GaAlN) as is recited in claim 32.

The text cited in the final Office Action is evidence that Hori does not show the claimed combination. The final Office Action referred to the semiconductor MISFET of Figure 7(e). The final Office Action referred to Hori, column 15, lines 2-3, describing Figures 5(a) and (b), Figure 6, and Figures 7(a) and (b), to show a gate insulator of silicon dioxide:

> "When forming the second barrier regions 15 and tunneling barriers 13a, 13b with SiO2 with thickness of 6 nm and 3 nm, respectively, and the storage regions 11a, 11b and

low barrier region 12 as a whole with Si of 10nm in thickness..." Hori, column 15, lines 1-5.

The final Office Action then referred to the summary of Hori, column 7, lines 64-67. This text does not refer to a specific figure:

> "In case that the tunneling barrier in the conductive carrier storage part is made of GaAlN thin film, the storage regions and low barrier region in the conductive carrier storage part may be made of GaN thin film." Hori, column 7, lines 64-67.

Hori is describing combinations of materials in different structures in these quotes. In column 15, Hori is describing a structure having a tunneling barrier with SiO2, and in column 7 Hori is describing a tunneling barrier made of GaAlN. In column 15, Hori is describing a structure having storage regions and a low barrier region of Si, and in column 7 Hori is describing a structure having storage regions and a low barrier region of GaN. Hori is showing SiO2 in a structure with Si, and GaAlN in a structure with GaN. Hori does not describe a structure of silicon dioxide SiO_2 with GaN or GaAlN as is recited in claim 32.

The final Office Action states that "[l]abels, statements of intended use, or functional language do not structurally distinguish claims." Final Office Action, page 3. This statement does not remedy the deficiency in Hori.

The applicant respectfully submits that Hori does not show forming a gate insulator comprising silicon dioxide (SiO_2) and forming a floating gate comprising gallium nitride (GaN) or gallium aluminum nitride (GaAlN) as is recited in claim 32 and others of the rejected claims.

The MPEP states the following with regard to rejections under 35 USC § 103:

> "To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations." MPEP 2143.

A Federal Circuit opinion states that the suggestion or motivation to combine references and the reasonable expectation of success must both be found in the prior art. MPEP 2143 citing *In re Vaeck*, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991).

Multiple Federal Circuit decisions emphasize the need for the PTO to furnish evidence in support of claim rejections. For example, the Federal Circuit addressed citation of "basic knowledge and common sense" in rejections in *In re Zurko*, 59 USPQ2d 1693 (Fed. Cir. 2001):

> "With respect to core factual findings in a determination of patentability, however, the Board [Board of Patent Appeals and Interferences] cannot simply reach conclusions based on its own understanding or experience – or on its assessment of what would be basic knowledge or common sense. Rather, the Board must point to some concrete evidence in the record in support of these findings." *In re Zurko*, 59 USPQ2d at 1697.

The Federal Circuit has particularly emphasized the need for the PTO to furnish evidence in support of claim rejections under 35 USC § 103 in *In re Lee*:

> "When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness.....The factual inquiry whether to combine references must be thorough and searching....It must be based on objective evidence of record." *In re Lee*, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002).

> "the Board [Board of Patent Appeals and Interferences] must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion.....Deferential judicial review under the Administrative Procedure Act does not relieve the agency of its obligation to develop an evidentiary basis for its findings." *In re Lee*, 61 USPQ2d at 1434.

> "when they [the Board] rely on what they assert to be general knowledge to negate patentability, that knowledge must be articulated and placed on the record....The board cannot rely on conclusory statements when dealing with particular combinations of prior art and specific claims, but must set forth the rationale on which it relies." *In re Lee*, 61 USPQ2d at 1435.

The final Office Action states that "Hori does not explicitly show a floating gate and a control gate." However, the final Office Action has not stated specifically how Hori is being modified to reject claims 24, 30, 32-33, 37-38, 42-43, 47-48, 52-53, and 57-58 under § 103.

The final Office Action has not provided evidence showing a teaching, motivation, or suggestion to modify Hori as is required by *In re Lee*. The final Office Action has not presented prior art showing a reasonable expectation of success of this particular modification of Hori as is required by *In re Vaeck*. The rejection is not supported by concrete evidence in the record as is required by *In re Zurko*.

The final Office Action states that "the floating gate and the control gate are a label that does not structurally distinguish over storage regions in Hori's device." Final Office Action, page 5. The applicant respectfully submits that since claims were rejected under 35 USC § 103(a) in view of Hori, the final Office Action is necessarily modifying the showing of Hori in some way. Hori alone is not showing the subject matter claimed. This modification is not specifically explained in the final Office Action.

The final Office Action states that:

> "Hori teaches in figure 7(e) a gate insulator 15 comprising silicon dioxide (column 15, lines 2-3) and a floating gate 11a comprising a floating gate material selected from the group consisting of gallium nitride (GaN) and gallium aluminum nitride (GaAlN) (column 7, lines 65-67)." Final Office Action, page 6.

This is not what Hori teaches. The full quotes from Hori reproduced above indicate that Hori does not show an insulator of SiO2 with a floating gate of GaN or GaAlN. The final Office Action is using hindsight to piece together the elements recited in the claims from Hori, and this is forbidden by case law. See *In re Dembiczak*, 50 USPQ2d 1614 (Fed. Cir. 1999).

The applicant respectfully submits that a *prima facie* case of obviousness of claims 24, 30, 32-33, 37-38, 42-43, 47-48, 52-53, and 57-58 has **not** been established in the final Office Action, and that claims 24, 30, 32-33, 37-38, 42-43, 47-48, 52-53, and 57-58 are in condition for allowance.

Claims 25-26, 31, 34-36, 39-41, 44-46, 49-51, 54-56, and 59-61 were rejected under 35 USC § 103(a) as being unpatentable over Hori as applied above in view of Major et al. (U.S. Patent Number 6,130,147, Major). The applicant respectfully traverses.

Major relates to arsenide-nitride semiconductor materials. However, Major does not supply the elements missing in Hori discussed above. In particular, Major does not show

forming a gate insulator comprising silicon dioxide (SiO_2) and forming a floating gate comprising a material selected from the group consisting of gallium nitride (GaN) and gallium aluminum nitride (GaAlN) as is recited in claim 24.

The final Office Action states that "it would have been obvious to ….. combine the Hori structure using the method of Major in order to increase the cracking efficiencies of ammonia." Final Office Action, page 4. The final Office Action has not provided evidence of this teaching, motivation, or suggestion to combine Hori and Major as is required by *In re Lee*. The final Office Action has not presented prior art showing a reasonable expectation of success of the combination of Hori and Major as is required by *In re Vaeck*. The rejection is not supported by concrete evidence in the record as is required by *In re Zurko*.

The final Office Action is not persuaded by the argument that "Major does not supply the elements missing in Hori." Final Office Action, page 6. However, Major does not show forming a structure with silicon dioxide SiO_2 and a material from the group consisting of GaN and GaAlN as is recited in claim 24.

For reasons analogous to those stated above, and the limitations in the claims, the applicant respectfully submits that a *prima facie* case of obviousness of claims 25-26, 31, 34-36, 39-41, 44-46, 49-51, 54-56, and 59-61 has **not** been established in the final Office Action, and that claims 25-26, 31, 34-36, 39-41, 44-46, 49-51, 54-56, and 59-61 are in condition for allowance.

CONCLUSION

The applicant respectfully submits that all of the pending claims are in condition for allowance, and such action is earnestly solicited. The Examiner is invited to telephone the below-signed attorney at 612-373-6973 to discuss any questions which may remain with respect to the present application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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Date 29 AUGUST 2003

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop RCE, Commissioner of Patents, P.O.Box 1450, Alexandria, VA 22313-1450, on this 29th day of August, 2003.

Amy Moriarty
Name

_____
Signature